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EXAMINER

TAYLOR, NICHOLAS R

ART UNIT	PAPER NUMBER
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2141

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/732,739	Applicant(s) DOUGLAS, CHET R.	
	Examiner Nicholas R. Taylor	Art Unit 2141	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-30 have been presented for examination and are rejected.

Response to Arguments

2. Applicant's arguments filed October 18th, 2007, have been fully considered but they are deemed not persuasive. The previous claim objections are withdrawn with respect to the amended claim language of claims 9, 12, and 13.

3. In the remarks, applicant argued in substance that:

(A) The rejection under 35 U.S.C. 101 was inappropriate because claims 25-30 define a structural and functional interrelationship between the instructions and a machine-readable medium which permit functionality of the instructions to be realized.

As to point (A), Applicant's specification in paragraph 0013 defines a "machine-readable medium" as "compris[ing] such a carrier wave." In the same paragraph, carrier wave is defined to include propagated "data signals" transmitted over a communication link. Propagated signals do not fall within a statutory category limited to a process, machine, manufacture, or composition of matter. Any functional interrelationship of the instructions and the propagated signals does not change the definition of the medium as defined by Applicant's specification. Accordingly, the rejection is not withdrawn.

(B) The prior art of Riddle fails to teach determining a total amount of extra bandwidth from the plurality of active devices that have extra bandwidth. Further, Riddle fails to teach determining a number of active devices that require extra bandwidth and adjusting the initial bandwidth by reallocating extra bandwidth. The disclosed portions of Riddle's disclosure simply states that applications that receive their minimum bandwidth may receive additional available bandwidth if they haven't exceeded their maximum bandwidth. Thus, the bandwidth is not distributed based on the devices that require it.

As to point (B), Riddle teaches a bandwidth reallocation system that dynamically assigns bandwidth based on needs of the by active devices (see summary). Riddle sets an initial bandwidth limit for each of a plurality of active devices (col. 13, lines 39-57 and figs. 8(a)-(c)) and determines a total amount of extra bandwidth and devices that require it (col. 13, lines 58-62 and fig. 8(c)). One method used to accomplish this task is an UpdateAllocation process, outlined in fig. 8C. An initial bandwidth limit is set for the associated active devices, for example, through the UpdateValue process of fig. 6. Riddle takes into consideration the bandwidth requirements of candidate devices through, among other things, the use of process priorities (col. 13, lines 16-38). The initial bandwidth limit is later modified through the reallocation of extra bandwidth to the plurality of devices that require it (col. 13, line 58 to col 14, line 20 and fig. 8(c)).

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 25-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Specifically, the "machine-readable medium" would reasonably be interpreted by one of ordinary skill in the art as failing to fall within a statutory category of invention, because applicant's disclosure defines "machine-readable medium" to include propagated signals (e.g., carrier waves; see page 3, paragraph 0012).

Thus, in the context of the disclosure and claims in question, one of ordinary skill in the art would reasonable interpret the claimed subject matter to encompass intangible embodiments. As such, the claimed invention is not limited to a process, machine, manufacture, or composition of matter. Thus, the claimed limitations are not limited to statutory subject matter and are therefore nonstatutory.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Riddle (U.S. Patent 5,983,261).

8. As per claims 1, 15, 20, and 25, Riddle teaches a method comprising:
setting an initial bandwidth limit (Riddle, col. 13, lines 39-57 and figs. 8A, 8B, and 8C via UpdateAllocation)

for each of a plurality of active devices associated with a controller; (Riddle, col. 10, lines 24-54 and fig. 6, where the active devices are determined)

determining a total amount of extra bandwidth from the plurality of active devices that have extra bandwidth, and determining a number of the plurality of active devices that require extra bandwidth; and (Riddle, col. 13, lines 58-62 and fig. 8C)

if there is extra bandwidth, and one or more of the plurality of active devices require extra bandwidth, adjusting the initial bandwidth limit by reallocating the extra bandwidth to the one or more plurality of active devices that require extra bandwidth, the adjusting resulting in a bandwidth limit corresponding to each of the plurality of active devices (Riddle, col. 13, line 58 to col. 14, line 20, and fig. 8C).

9. As per claims 2, 16, 21, and 26, Riddle teaches the system further comprising for each of the plurality of active devices, allocating the corresponding bandwidth limit to each of the plurality of active devices (Riddle, col. 13, lines 39-57 and figs. 8A and 8B).

10. As per claim 3, Riddle teaches the system further wherein the initial bandwidth limit is set to an average bandwidth (Riddle, col. 13, line 39 to col. 14, line 20).

11. As per claim 4, Riddle teaches the system further wherein the initial bandwidth limit is additionally set to at least a minimum bandwidth (Riddle, col. 13, line 39 to col. 14, line 20).

12. As per claim 5, Riddle teaches the system further wherein said reallocating the extra bandwidth from the one or more plurality of devices that have extra bandwidth to the one or more plurality of active devices that require extra bandwidth comprises:

decreasing the initial bandwidth limit by the extra bandwidth from the plurality of active devices that have extra bandwidth; and increasing the initial bandwidth limit by an amount based on the extra bandwidth for a select set of the one or more plurality of active devices that require extra bandwidth (Riddle, col. 13, line 58 to col. 14, line 20, and fig. 8C, wherein the UpdateAllocation process decreases extra bandwidth while increasing the bandwidth of devices that require it).

13. As per claim 6, Riddle teaches the system further wherein said increasing the initial bandwidth limit by an amount based on the extra bandwidth comprises determining an add count based on the select set of the one or more plurality of active devices that require extra bandwidth (Riddle, col. 14, lines 2-20 and fig. 8C).

14. As per claim 7, Riddle teaches the system further wherein the select set comprises at least one of the following: at least one of one or more of the plurality of active devices that has a total requested bandwidth greater than the average bandwidth; and at least one of one or more of the plurality of active devices that is associated with a priority (Riddle, col. 13, lines 16-39 where the UpdateAllocation process is based on target priority).

15. As per claim 8, Riddle teaches the system further wherein the total requested bandwidth for a given one of the plurality of active devices comprises an amount of bandwidth to be sent from the given active device to the controller, and an amount of bandwidth already sent from the given active device to the controller (Riddle, col. 13, line 58 to col. 14, line 20 and fig. 8C).

16. As per claims 9, 19, 23, and 30, Riddle teaches the system further comprising additionally determining a reserved bandwidth, and deducting the reserved bandwidth from a maximum bandwidth prior to setting the initial bandwidth limit for the plurality of active devices (Riddle, see, e.g., fig. 8A where the reserved bandwidth that is being currently used is subtracted from the maximum bandwidth currently available).

17. As per claim 10, Riddle teaches a method comprising:

determining from among a plurality of devices associated with a controller if any of the plurality of devices is an active device; (Riddle, col. 10, lines 24-54 and fig. 6, where the active devices are determined)

if one or more of the plurality of devices is an active device:

setting an initial bandwidth limit for each of the one or more active devices; (Riddle, col. 13, lines 39-57 and figs. 8A and 8B)

determining a total amount of extra bandwidth from the one or more active devices that have extra bandwidth, and determining a number of the one or more active devices that require extra bandwidth; and (Riddle, col. 13, lines 58-62 and fig. 8C)

if there is extra bandwidth, and one or more of the plurality of active devices require extra bandwidth, adjusting the initial bandwidth limit by reallocating the extra bandwidth to the one or more plurality of active devices that require extra bandwidth, the adjusting resulting in a bandwidth limit corresponding to each of the plurality of active devices; and (Riddle, col. 13, line 58 to col. 14, line 20, and fig. 8C).

if none of the plurality of devices is an active device, then setting the bandwidth limit for each of the plurality of devices to an adjusted maximum bandwidth (Riddle, col. 10, lines 24-54 and fig. 6).

18. As per claim 11, Riddle teaches the system further comprising for each of the one or more active devices, allocating the corresponding bandwidth limit (Riddle, see, e.g., the processes of figs. 6, 8B, and 8C).

12. The method of claim 11, additionally comprising: if one or more of the plurality of devices is an active device, and one or more of the plurality of devices is not an active device, allocating a bandwidth limit of zero for each of the one or more plurality of devices that is not an active device (Riddle, col. 10, lines 24-54 and fig. 6, where inactive devices are set to zero bandwidth limit).

19. As per claim 13, Riddle teaches the system further comprising additionally determining a reserved bandwidth, and deducting the reserved bandwidth from a maximum bandwidth prior to setting the initial bandwidth limit for the one or more active devices (Riddle, see, e.g., fig. 8A where the reserved bandwidth that is being currently used is subtracted from the maximum bandwidth currently available).

20. As per claim 14, Riddle teaches the system further wherein the reserved bandwidth is available to any of the plurality of devices that is not an active device (Riddle, fig. 8A and col. 13, lines 16-56).

21. As per claims 17, 22, and 28, Riddle teaches the system further wherein the select set comprises at least one of the following: at least one of one or more of the

plurality of active devices that has a total requested bandwidth greater than the average bandwidth; and at least one of one or more of the plurality of active devices that is associated with a priority (Riddle, col. 13, lines 16-39 where the UpdateAllocation process is based on target priority).

22. As per claims 18 and 29, Riddle teaches the system further wherein the total requested bandwidth for a given one of the plurality of active devices comprises an amount of bandwidth to be sent from the given active device to the controller, and an amount of bandwidth already sent from the given active device to the controller (Riddle, col. 13, line 58 to col. 14, line 20 and fig. 8C).

23. As per claim 24, Riddle teaches the system further wherein bandwidth comprises a number of I/O (input/output) requests sent to a storage controller from a plurality of peripheral storage devices (Riddle, col. 1, line 55 to col. 2, line 30, wherein the network communications for the disclosed embodiment comprise I/O requests to peripheral storage devices via a controller).

24. As per claim 27, Riddle teaches the system further wherein said instructions that result in increasing the initial bandwidth limit based on the extra bandwidth additionally result in determining an add count based on the select set of the one or more plurality of active devices that require extra bandwidth (Riddle, col. 14, lines 2-20 and fig. 8C).

Conclusion

25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas Taylor whose telephone number is (571) 272-3889. The examiner can normally be reached on Monday-Friday, 8:00am to 5:30pm, with alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on (571) 272-3880. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Application/Control Number:
10/732,739
Art Unit: 2141

Page 12

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NT
1-4-08

Nicholas Taylor
Examiner
Art Unit 2141



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